Connecticut Department of Energy & Environmental Protection

2022 Guidance for State DERA Project Proposals

Mobile sources account for 36% of the carbon pollution and 67% of the smog-forming air pollution in Connecticut. To address this pollution, the Department of Energy and Environmental Protection (DEEP) is committed to supporting projects that reduce the emissions impact from diesel and other vehicles throughout Connecticut, but especially in areas disproportionately impacted by diesel related air pollution. This year, the U.S. Environmental Protection Agency (EPA) is allocating to Connecticut a minimum of $355,000, authorized under the federal Diesel Emissions Reduction Act (DERA), for projects to reduce diesel pollution in the state. In addition, DEEP has reserved the opportunity to more than double its DERA allocation using funds available through the "DERA Option" under Connecticut's Volkswagen Mitigation Program (VW Program); this could increase the total to as much as $1,189,000. DEEP is seeking grant proposals from municipalities, organizations, and businesses for diesel emissions reduction projects that are environmentally and economically beneficial, can be initiated promptly, and will be completed by August 31, 2023.

Recent Program Requirement Changes Applicable in 2022: Connecticut corporations and limited liability entities are required to submit, with their application, a Certificate of Good Standing, which is available from the Department of Revenue Services. In addition, all applicants are required to disclose any active or pending litigation within the past three years. EPA has also added a requirement that successful grantees submit an eligibility statement attesting that the ownership, usage, and remaining life of the vehicle(s) to be replaced meet eligibility requirements for the program. These new requirements are included in the Part VI, Terms & Conditions and require a signature.

Applicants should be aware that DEEP has completed three rounds of project solicitations under Connecticut's Volkswagen Mitigation Program[1] (VW Program) and will be seeking additional proposals for VW funding in the future. VW Program funds will be available over the next seven years or until funds are exhausted, whichever first occurs, to fund nitrogen oxide (NO_X) mitigation projects, including diesel emission reduction projects. Incentives under the VW Program are potentially more generous than under the DERA Program, however many clean diesel projects that are eligible for the State DERA Program, are not eligible for VW funding.

Clean Diesel Projects Eligible for State DERA Funding

There have been no significant changes to the maximum incentives available under the DERA[2] Program from the FY 2021 program. EPA made significant changes to eligibility guidelines last year that include:

- Applicants are now required to attest that[3]:

[1] Information is available on DEEP's Volkswagen Settlement website at https://portal.ct.gov/DEEP/Air/Mobile-Sources/VW/VW-Settlement---Home

[2] Additional information regarding DERA, including definitions for key terms used, may be found at https://www.epa.gov/cleandiesel and in the FY 2021 State Clean Diesel Grant Program Information Guide, which is available at 2021-2022 Diesel Emissions Reduction Act (DERA) State Grants Program Guide (EPA-420-B-22-023, April 2022)

[3] Eligibility requirements are incorporated into section VIII of the application form.

- vehicles proposed to be replaced are fully operational;
- vehicles proposed to be replaced have operated at least 7,000 miles/year for two years prior to the application; and
- vehicles proposed to be replaced have at least three years of remaining useful life at the time the proposal is submitted.

Additional funding level information is provided below to highlight eligibility differences between the DERA and VW programs. *The italicized text below identifies State DERA-eligible projects that are either limited or not eligible under the VW Program*.

- **Replacement:** *(The eligibility of nonroad equipment replacement projects under the State DERA Program is very broad, while nonroad equipment replacements under the VW Program are limited to replacing large forklifts, cargo-handling port equipment and airport ground support equipment with electric equivalents.)*
  - Reimbursement for replacement of highway diesel trucks and buses with 2019 engine model year (EMY) or newer diesel or clean alternative fuel vehicles and equipment can be funded up to 25%.
  - Reimbursement for replacement of a drayage truck[4] with a newer drayage truck powered by a 2015 model year or newer certified engine can be funded up to 50%. *In addition, for the duration of the project period (October 1, 2021 through September 30, 2023), drayage truck replacement grants are allowed to cover required/scheduled maintenance, as specified in the owner's manual, which is necessary to meet the warranty requirements for diesel particulate filters installed on the trucks.*
  - Reimbursement for replacement with vehicles or equipment powered by a 2019 EMY or newer engine certified to meet the California Air Resources Board's (CARB's) Optional Low-NO_X Standards of 0.1 g/bhp-hr, 0.05 g/bhp-hr, or 0.02 g/bhp-hr NO_X can be funded up to 35%.[5]
  - Reimbursement for replacement with new, all-electric replacement vehicles or equipment can be funded up to 45% of the cost. The purchase and installation of electric vehicle (EV) charging infrastructure can be included in an EV replacement project.
  - Reimbursement for replacement of locomotives, *marine vessels*, and non-road vehicles and equipment with new equivalents that have Tier 3 or Tier 4 engines (25% of the cost),
- **Repower / Engine Replacement:** *(The eligibility of nonroad equipment repower projects under the State DERA Program is very broad, while nonroad repowers under the VW Program are limited to repowering the previously mentioned port and airport equipment, as well as tugboats and ferries.)*

[4] A "drayage truck" means any Class 8b in-use on-road vehicle with a gross vehicle weight rating of greater than 33,000 pounds operating on or transgressing through port or intermodal rail yard property for the purpose of loading, unloading or transporting cargo, such as containerized, bulk or break-bulk goods.

[5] Engines certified to CARB's Optional Low NOx Standards may be found by searching CARB's Executive Orders for Heavy-duty Engines and Vehicles, found at: www.arb.ca.gov/msprog/onroad/cert/cert.php.

    - Reimbursement for repowering vehicles or equipment with EMY 2019 or newer diesel or clean alternative fuel engine configurations certified by EPA or CARB can be funded up to 40%.
    - Reimbursement for replacement with a 2019 EMY or newer engine certified to meet CARB's Optional Low-NO_X Standards can be funded up to 50%.
    - Reimbursement for replacing a diesel engine with an electric motor or electric power source can be funded up to 60% of the cost (labor and equipment).
- ***Engine Remanufacture*** *(a.k.a. engine rebuilds) that are verified or certified by EPA can be funded up to 100% of the cost of the eligible upgrade*.[6]
- *Several systems which convert a conventional diesel engine configuration to a hybrid-electric system have been verified as retrofits for some nonroad and marine engines and can be funded up to 65%.*
- **Clean Alternative Fuel Conversions** are original equipment manufacturer highway diesel vehicles and engines that are altered to operate on alternative fuels such as propane or natural gas; these can be funded up to 40%. Aftermarket alternative fuel conversion systems must be certified for the specific vehicle or engine family that is being converted, whether they are CARB or EPA-certified, provided the vehicle being converted is CARB or 50-state certified and is otherwise eligible for sale in Connecticut.[7] Additionally, conversions must be consistent with any applicable Connecticut Department of Motor Vehicles safety policies for alternatively fueled vehicles to ensure public safety.
- ***EPA-Verified Idle Reduction Technologies*:**[8]
    - *Stationary idle reduction technologies, such as electrified parking spaces (truck stop electrification), power sources for hybrid transport refrigeration units (TRUs), and auxiliary power systems at distribution centers, intermodal facilities, and other places where trucks congregate, can be funded up to 30%.*
    - *Idle reduction technologies for locomotives can be funded up to 40%.*
    - Marine Shorepower: Reimbursement for eligible marine shorepower connection systems, including the cost of modifications, attachments, accessories, or auxiliary apparatus necessary to make the equipment functional can be funded up to 25% of the cost (labor and equipment).

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[6] A list of eligible, EPA-verified engine upgrade technologies is available at: www.epa.gov/verified-diesel-tech/verified-technologies-list-clean-diesel. Lists of certified remanufacture systems for locomotives and marine engines are available at: www.epa.gov/compliance-and-fuel-economy-data/engine-certification-data, and additional information on remanufacture systems is available at: www.epa.gov/vehicle-and-engine-certification/remanufacture-systems-category-1-and-2-marine-diesel-engines. The actual engine upgrades or remanufacture systems used by the grant recipient must be specifically named on EPA's list of certified remanufacture systems or EPA or CARB's Verified Exhaust Control Technologies lists at the time of acquisition, and used only for the vehicle/engine applications specified on the lists, to be eligible for funding.

[7] EPA's lists of "Certified Conversion Systems for New Vehicles and Engines" and "Conversion Systems for Intermediate-Age Vehicles and Engines" are available at www.epa.gov/vehicle-and-engine-certification/lists-epa-compliant-alternative-fuel-conversion-systems; CARB's list of "Approved Alternate Fuel Retrofit Systems" is available at: www.arb.ca.gov/msprog/aftermkt/altfuel/altfuel.htm.

[8] Lists of eligible, EPA verified idle reduction technologies are available at: www.epa.gov/verified-diesel-tech/smartway-technology.

    - *Funding for auxiliary power units and other idle reduction technologies for long haul trucks and school buses can be funded up to 25% or up to 100% if combined with installation of emission controls.*
- ***Exhaust emission control technologies*** *(a.k.a. emission system retrofits) that are verified or certified by EPA or CARB can be funded up to100%.*
- ***EPA-Verified Aerodynamic Technologies and Low Rolling Resistance Tires:*** *Funding for installation on long haul Class 8 trucks is available up to 100%, but only if combined with EPA or CARB-verified exhaust emission control technologies.*[9]
- **Not Eligible:** Projects initiated prior to filing an application for the program are not eligible for funding. Project initiation activities that can disqualify an application include initiating an RFP, selecting a Vendor, ordering vehicles or equipment, or hiring an installation contractor.
- **Not Eligible:** EPA no longer allows funds awarded under this grant to be used for leasing vehicles, engines, or equipment. If financing is necessary, the purchase must be financed with a conventional purchase loan.

Evaluation Criteria

Proposed projects will be evaluated based on diesel emission reductions, cost effectiveness (including the applicant's ability to provide matching funds) and the potential for completion by August 31, 2023. Proposed projects will also be selected for funding based on a set of preferential criteria developed to be consistent with EPA's priorities for this grant program and with the transportation section of the 2018 Comprehensive Energy Strategy for Connecticut.[10] The project location is the primary area where the affected vehicles/engines operate, or the primary area where the emissions benefits of the project will be realized; this may not be the same as the applicant's address. These criteria include, but are not limited to:

- Project results in a significant reduction of carbon dioxide or other greenhouse gas emissions.
- Vehicle/equipment operates in an environmental justice (EJ) community;[11]
- Vehicle/equipment operates in an EPA-designated maintenance area for particulate matter (Fairfield, Middlesex, or New Haven Counties);
- Vehicle/equipment operates near transportation hubs or corridors;
- Vehicle/equipment operates in an area that receives a disproportionate quantity of air pollution from diesel fleets, including ports, rail yards, terminals, construction sites, school bus depots/yards, and distribution centers;
- Applicant has or project includes motor vehicle anti-idling education and outreach; and

[9] A list of eligible, EPA-verified aerodynamic technologies is available at: www.epa.gov/verified-diesel-tech/smartway-verified-list-aerodynamic-devices. It includes: a) gap fairings that reduce turbulence by decreasing the gap between the tractor and the trailer; b) trailer side skirts that minimize wind under the trailer; and c) trailer rear fairings that reduce turbulence and pressure drop at the rear of the trailer.

[10] See the 2018 Comprehensive Energy Strategy at: https://portal.ct.gov/-/media/DEEP/energy/CES/2018ComprehensiveEnergyStrategypdf.pdf .

[11] Connecticut EJ communities are listed on the DEEP website at: https://portal.ct.gov/DEEP/Environmental-Justice/Environmental-Justice-Communities

- Project is consistent with the transportation section of the 2018 Comprehensive Energy Strategy for Connecticut[12] and the state's EV Roadmap;[13]
- Applicant demonstrates past experience or existing program structure facilitates successful implementation of proposed project;
- Applicant has verified funding that exceeds the **minimum required cost share**; and
- Applicant is an active participant in EPA's SmartWay program.[14]

Program Requirements & Restrictions

The 2022 State DERA Program has new requirements for documenting ownership, usage and remaining life of the vehicles and equipment to be covered by a grant.

1. The existing vehicle, engine, or equipment must be fully operational. Equipment must be able to start, move, and have all necessary parts to be operational. On-road vehicles must be registered with the Department of Motor Vehicles.

2. The participating fleet owner must currently own and operate the existing vehicle or equipment and have owned and operated the vehicle during the two years prior to upgrade.

3. The existing vehicle, engine, or equipment must have at least three years of remaining life at the time of upgrade. Remaining life is the fleet owner's estimate of the number of years until the unit would have been retired from service if the unit were not being upgraded or scrapped because of the grant funding. The remaining life estimate is the number of years of operation remaining even if the unit were to be rebuilt or sold to another fleet. The remaining life estimate depends on the current age and condition of the vehicle at the time of upgrade, as well as things like usage, maintenance, and climate.

4. Highway Usage: The mileage of multiple units may be combined to reach the thresholds below where those units will be scrapped and replaced with a single unit.

a. School Buses: To be eligible for funding, the existing vehicle must have accumulated at least 7,000 miles/year during the two years prior to upgrade, or during calendar year (Jan-Dec) 2019.

b. All Other Highway Engines: To be eligible for funding, the existing vehicle must have accumulated at least 7,000 miles/year during the two years prior to upgrade.

5. Nonroad, Locomotive and Marine Usage: The engine operating hours of multiple units may be combined to reach the thresholds below where those units will be scrapped and

[12] 2018 Comprehensive Energy Strategy, Transportation Section, can be found at https://portal.ct.gov/-/media/DEEP/energy/CES/TransportationSectorpdf.pdf

[13] Electric Vehicle Roadmap for Connecticut: A Policy Framework to Accelerate Electric Vehicle Adoption(EV Roadmap), released in April of 2020, can be found on the DEEP website at https://portal.ct.gov/DEEP/Climate-Change/EV-Roadmap.

[14] For information regarding EPA's SmartWay program or to enroll, go to https://www.epa.gov/smartway.

replaced with a single unit.

a. Agricultural Pumps: To be eligible for funding, agricultural pumps must operate at least 250 hours/year during the two years prior to upgrade.

b. All Other Nonroad Engines: To be eligible for funding, nonroad engines must operate at least 500 hours/year during the two years prior to upgrade.

c. Locomotive and Marine Usage: To be eligible for funding the existing locomotive and marine engines must operate at least 1,000 hours/year during the two years prior to upgrade.

6. Documentation Requirements: Participating fleet owners (successful applicants) must attest to each criterion in 1-5 above in a signed eligibly statement. Such statement must include each vehicle make, model, year, vehicle identification number, odometer/usage meter reading, engine make, model, year, horsepower, engine ID or serial number, and vehicle/equipment registration/licensing number and state. While EPA does not require this documentation be submitted at the time of application, DEEP requires this documentation within Part VIII of the application form to verify the eligible use of grant funds.

For projects involving locomotives, marine engines and stationary engines, no funds awarded under this program shall be used to fund the costs of emissions reductions that are mandated under federal law. The restriction applies when the mandate takes effect (the effective date) for any affected vehicles, engines, or equipment. DEEP may request additional information from applicants to determine whether this restriction is applicable.

In contrast to the VW program, DERA funding is allowed for the replacement of EMY 2010 or newer vehicles with Zero-Emission or CARB Low-NOx vehicles. Under the 2022 guidelines, the owner may retain or sell the 2010 EMY or newer vehicle provided that a 1996-2009 EMY vehicle will be scrapped in its place. Selling the 2010 EMY or newer vehicle would provide more funding to offset the increased cost of the electric or low NOx replacement. EPA prefers that the scrapped unit currently operates within the same project location(s) as the 2010 EMY or newer vehicle currently operates, however alternative scenarios will be considered. The term "project location" as used in this program refers to the primary area where the affected vehicles/engines operate, or the primary area where the emissions benefits of the project will be realized. Under this scenario, a detailed scrappage plan must be submitted and will require prior EPA approval.

For all replacement projects, the replacement vehicle, engine, or equipment will continue to perform the same function and operation as the vehicle, engine, or equipment that is being replaced. For highway vehicles, the replacement should be of the same type and gross vehicle weight rating as the vehicle, engine being replaced. For non-road equipment, the horsepower of the replacement engine should not increase more than 40%. Replaced vehicles, equipment and engines must be rendered inoperable (scrapped). Any income from the sale of the scrap metal must be reported but will not impact the amount of the grant.

Because this is a rebate program, DERA rules do not require that replacement vehicles/equipment, contractual services, and/or technologies used on the project be selected through an open and competitive process. However, all recipients must comply with state and federal contracting requirements and non-government award recipients may be required to enter into a contract with the State of Connecticut.

Estimates or specification sheets may be requested to confirm costs cited in the application. Applicants should verify that there are no prohibitions or restrictions on the use of federal funds for the proposed project. This is a reimbursement program; award recipients will be required to demonstrate payment for the project before receiving awarded funds.

On Highway Vehicles: On-highway vehicles must be Class 5 or above.[15] Most on-highway projects are limited to vehicles with EMY older than 2009. However, repower or replacement with electric or clean alternative engines and vehicles is allowed for vehicles EMY 2010 and newer. The addition of emission controls (DOCs & DPFs) cannot be funded on EMY 2007 and newer trucks; SCR installation cannot be funded for EMY 2010 and newer trucks. Auxiliary Power Units and generators are only eligible on long-haul class 8 trucks with sleeper cabs and school buses with EMY 2006 or older.

Drayage truck replacement proposals must establish that any existing truck replaced with grant funds has a history of operating on a frequent basis over the prior year as a drayage truck; its replacement, purchased with grant funds, must operate in a manner consistent with the definition of a drayage truck.

Battery Electric Powered Vehicles and Equipment: Eligible costs for battery electric powered vehicle, equipment, and engine replacement projects can include the purchase and installation of one charging unit per vehicle, including the unit and charging cable, mount, and/or pedestal. These costs are subject to the mandatory cost share requirements defined in Section X. **Ineligible costs** include "make ready or "behind the meter" costs such as power distribution to the pedestal, electrical panels and their installation, upgrades to existing electrical panels or electrical service, transformers and their installation, wiring/conduit and its installation, as well as electricity, operation and maintenance, stationary energy storage systems that power the equipment (e.g., batteries) and their installation, and on-site power generation systems that power the equipment (e.g., solar and wind power generation equipment) and their installation.

Nonroad Equipment: EPA's eligibility standard for replacing nonroad equipment, such as agricultural or construction equipment, is now based on a transition to cleaner, higher tiered engines. In addition, no funds awarded under the State DERA program shall be used to retrofit, replace, or upgrade a nonroad engine that has been operating fewer than 500 hours in the past year.

If a Tier 2 or Tier 3 locomotive, marine, or nonroad vehicle, equipment and/or engine is replaced, the units may be retained or sold if they will replace a similar, lower Tiered unit, and the lower Tiered unit will be scrapped. It is preferred that the scrapped unit currently operates within the same project location(s) as the original Tier 2 or 3 unit currently operates, however alternative scenarios will be considered. The term "project location" as used in this program guide refers to the primary area where the affected vehicles/engines operate, or the primary area where the emissions benefits of the project will be realized. Under this scenario, a detailed scrappage plan must be submitted and will require prior EPA approval.

[15] This means a Gross Vehicle Weight Rating (GVWR) greater than 16,001 lb. GVWR is the maximum weight of the vehicle, as specified by the manufacturer including total vehicle weight plus fluids, passengers, and cargo.

Table 1. Nonroad Engine Project Eligibility

Current Engine Tier	Vehicle/Equipment Replacement: EMY 2019+					Verified Retrofit
	Compression Ignition			Spark Ignition	Zero Emission[3]	
	Tier 0-2	Tier 3-4i	Tier 4	Tier 2		
Unregulated – Tier 2	No	Yes[1]	Yes	Yes	Yes	Yes
Tier 3	No	No	Yes	Yes	Yes	Yes
Tier 4	No	No	No	No	Yes	No
Current Engine Tier	**Engine Replacement**					**Verified Engine Upgrade**
	Compression Ignition			Spark Ignition	Zero Emission[4]	
	Tier 0-2	Tier 3-4i	Tier 4	Tier 2		
Unregulated – Tier 2	No	Yes[2]	Yes	Yes	Yes	Yes
Tier 3	No	No	Yes	Yes	Yes	Yes
Tier 4	No	No	No	No	Yes	No

[1]Tier 3 and Tier 4 interim (4i) allowed for vehicle/equipment replacement only when Tier 4 final is not yet available from OEM for 2021 model year equipment under the Transition Program for Equipment Manufacturers (TPEM).

[2]Tier 3 and Tier 4i engines may be used for engine replacement only if Tier 4 is demonstrated to not be available or feasible through a best achievable technology analysis as defined in Section VIII.D.1 below.

[3]Eligible fuel cell projects are limited to hydrogen fuel cell equipment replacements for eligible terminal tractors/yard hostlers, stationary generators, and forklifts.

[4]Fuel cell engine replacement is not eligible.

Marine & Locomotive Operating Hours: No funds awarded under the Program shall be used to replace upgrade or install idle reduction technologies on locomotive or marine engines that have been operating fewer than 1000 hours in the past year. Engine hours may be combined to reach the 1000-hour threshold where two engines will be scrapped and replaced with a single engine.

Marine Engine Tier: Funds awarded under this program can only be used to replace or upgrade marine engines as listed below.

Table 2: Marine Engine Project Eligibility

Engine Category	Engine Horsepower	Current Engine Tier	Engine & Vessel Replacement					Certified Remanufacture System[3]	Verified Engine Upgrade
			Compression Ignition			Spark Ignition (EMY 2019+)	Zero Emission[2]		
			Tier 1-2	Tier 3	Tier 4				
C1, C2	<803	Unregulated – Tier 2	No	Yes	No	Yes	Yes	Yes	Yes
C1, C2	≥804	Unregulated – Tier 2	No	Yes[1]	Yes	Yes	Yes	Yes	Yes
C1, C2	<803	Tier 3	No	No	No	Yes	Yes	No	No
C1, C2	≥804	Tier 3	No	No	Yes	Yes	Yes	No	No
C1, C2	≥804	Tier 4	No	No	No	No	No	No	No
C3	All	Unregulated - Tier 2	No	Yes	No	No	No	No	No
C3	All	Tier 3	No	No	No	No	No	No	No

[1]Tier 3 engines may be used for engine replacement only if Tier 4 is demonstrated to not be available or feasible through a best achievable technology analysis as defined in Section VIII.D.1 below. Over 800 HP, Tier 3 engines are not eligible for full vessel replacement.

[2]Fuel cell engine and vessel replacements are not eligible.

[3]Some marine engine projects may be subject to the restriction on mandated measures.

Marine Shore Connection: No funds awarded under this program shall be used for marine shore connection system projects that are expected to be utilized less than 1,000 MW-hr/year.

Locomotives Engine Tier: Eligibility of locomotive replacements and d repowers is now determined by Tier. Refer to Table 3 for further explanation.

Table 3: Locomotive Engine Project Eligibility

Current Locomotive Tier	Engine & Locomotive Replacement				Verified Retrofit	Idle-Reduction[2] Technology	Certified Remanufacture System[4]
	Tier 0–2+	Tier 3	Tier 4	Zero Emission[1]			
Unregulated - Tier 2+	No	Yes[3]	Yes	Yes	Yes	Yes	Yes
Tier 3	No	No	Yes	Yes	Yes	Yes	Yes
Tier 4	No	No	No	No	No	Yes	No

[1]Fuel cell engine and locomotive replacements are not eligible.
[2]Automatic engine start-stop technologies are only eligible to be installed on locomotives currently certified to Tier 0 or unregulated, subject to the restriction on mandated measures.
[3]Tier 3 engines may be used for engine replacement only if Tier 4 is demonstrated to not be available or feasible through a best achievable technology analysis as defined in Section VIII.D.1 below. Tier 3 is not eligible for locomotive replacement.
[4]Some locomotive engine projects may be subject to the restriction on mandated measures.

Note: Tier 0+, Tier 1+, Tier 2+, Tier 3, and Tier 4 represent locomotives manufactured or remanufactured under the more stringent Tier standards promulgated under the 2008 (current) locomotive and marine rule. Tier 0, Tier 1, and Tier 2 represent locomotives originally manufactured or remanufactured under the less stringent Tier standards promulgated in 1997.

Locomotive Shore Connection: No funds awarded under this program shall be used for locomotive shore connection system projects that are expected to be utilized less than 1,000 hours/year.

Proposal Submission

Proposal forms are available on DEEP's Diesel Grants & Funding web page at https://portal.ct.gov/DEEP/Air/Mobile-Sources/DERA-Grants . Questions should be directed to DEEP.MobileSources@ct.gov. Proposals should be submitted to the Connecticut Department of Energy and Environmental Protection (DEEP) **via e-mail** at DEEP.MobileSources@ct.gov with the subject "2022 DERA Grant Application" To be considered by DEEP, all proposals must be received by **Wednesday, November 30, 2022**, **at 4:00 p.m.**.